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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,304	03/19/2004	David Picco	f001	7837

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ATTN: Gerald Maliszewski  
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EXAMINER

PHAM, LAM P

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 09/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

### Period for Reply

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Phone interview on August 29, 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.  
4a) Of the above claim(s) 23-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20, 22 and 62 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/19/04.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-22 and 62, drawn to liquid sensor structure, classified in class 340, subclass 604.
  - II. Claims 23-39 and 58-61, drawn to system and method for detecting water leakage, classified in class 340, subclass 605.
  - III. Claims 40-57, drawn to building material with liquid sensors and method for detection of leakage using building material, classified in class 73, subclass 40.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I, III are related as combination and subcombinations.

Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because it can use any liquid sensor using resistance changing property without requiring sensors having a particular structure for detection of liquid or moisture and generate alarm signals. The subcombination (I and II) has separate utility such as detection of liquid or moisture and building material with liquid sensor for detection of liquid or moisture within a building.

3. During a telephone conversation with Mr. Gerald Maliszewski on August 29, 2006, a provisional election was made without traverse to prosecute the invention of system and method for detecting water leakage, claims 1-22, and 62. Affirmation of this election must be made by applicant in replying to this Office action. Claims 24-61 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 62 rejected under 35 U.S.C. 102(b) as being anticipated by Shih (US 5081422).

Regards claim 62, Shih discloses a three-dimensional (3D) water detection method comprising:

forming a 3D water detection field in a material (plywood or tar paper); and, supplying an electrical resistance via resistor (8) responsive to liquid in the material as seen in Figures 1 and 5; col. 4, lines 1-15.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3, 62 rejected under 35 U.S.C. 102(e) as being anticipated by Amacher (US 6995676).

Regards claim 1, Amacher discloses a three-dimensional liquid detection sensor (25) comprising:

a three-dimensional (3D) liquid detection field (x-y-z coordinate sensing); and,  
a first electrical connector (female connector by male connector 50) to supply a resistance measurement responsive to liquid in the detection field; high resistance when dry and low resistance when wet or liquid present; see Figures 4-7; col. 6, lines 1-67.

Regards claim 2, Amacher discloses the first electrical connector includes a first electrical contact and a second electrical contact for connecting to leads 40A and 40b as seen in Figures 4-7.

Regards claim 3, Amacher discloses the first electrical connector is shaped to electrically connect and physically engage a first mating connector (50) with a pair of electrical contacts as seen in Figures 4-7.

Regards claim 62, Amacher disclose a three-dimensional (3D) water detection method comprising:

forming a 3D water detection field in a material (structure); and,  
supplying an electrical resistance responsive to liquid in the material; referring to claim 1 for explanation.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-20 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Shih (US 5081422) in view of Amacher (US 6995676).

Regards claim 1, Shih discloses a three-dimensional liquid detection sensor () comprising:

a three-dimensional (3D) liquid detection field including surface plane and inside the plywood material as best seen in Figure 5; col. 3, lines 59 to col. 4, lines 15.

However, Shih fails to specifically disclose a first electrical connector to supply a resistance measurement responsive to liquid in the detection field.

It has been well known to provide electrical connectors for terminating conductors or wires for easy installation as found in speaker wires, electrical devices connection and many others.

Amacher in same field of endeavor teach of moisture sensor (25) providing a 3-D (X-Y-Z) liquid detection field and an electrical connector (female connector mating to male connector 50) connecting the sensor (leads 40A,B) to a receiver (30) at the convenience of plugging or inserting for supplying a resistance measurement responsive to liquid in the field as seen in Figures 4-7; col. 6, lines 1-67.

In view of Amacher teaching, it would have been obvious to one of ordinary skilled in the art to provide an electrical connector connecting to the 3-D liquid detection field of the liquid sensor for facilitating easy installation or connection for supplying a resistance measurement responsive to liquid in the field.

Regards claim 2, Shih and Amacher combinedly disclose the first electrical connector includes a first electrical contact and a second electrical contact for connecting to wires (59, 60) as seen in Figure 5 of Shih or leads (40A and 40b) as seen in Figures 4-7 of Amacher.

Regards claim 3, Shih and Amacher combinedly disclose the first electrical connector (either female or male) is shaped to electrically connect and physically engage a first mating connector (50) with a pair of electrical contacts as seen in Figures 4-7 of Amacher.

Regards claim 4, Shih and Amacher both fail to disclose a second electrical connector with a pair of electrical contacts.

However, one of ordinary skilled in the art would recognize that a pair of wires or conductors having two ends, the first end is terminated with a first connector for easy connection and thus, the second end of the wires or conductors would also be terminated with a second connector with a pair of contacts for easy connection to another sensor or device as desired.

Regards claim 5, Shih discloses the 3-D liquid detection field includes:  
a first plurality of pins (61, 62) having a distal end electrically connected to the first electrical contact via wire (59); and,

a second plurality of pins (61, 62) having a distal end electrically connected to the second electrical contact via wire (60) as seen in Figure 5; col. 4, lines 1-15.

Regards claim 6, Shih disclose each pin has an axis aligned in a first plane as defined by the plywood surface plane as seen in figure 5.

Regards claim 7, Shih disclose the pins are metal staple pins or nails as seen in col. 5, lines 16-18. It has been well known that the standard staple pins have right angle shape as seen on paper stapler. Thus, it would have been obvious to one of ordinary skilled in the art to realize that the metal staple pins have right-angle shape.

Regards claim 8, Shih disclose the first plurality of pins and the second plurality of pins each have an axis aligned in a first plane perpendicular to surface of plywood as seen in figure 5.

However, Shih fails to disclose the second plurality of pins each have an axis aligned in a second plane, different from the first plane.

One of ordinary skilled in the art would realize that orienting the second plurality of pins in different plane with respect to the first plurality of pins would change the distance between the first plurality of pins and second plurality of pins, however, the 3-dimension liquid detection field is still maintained, thus, it would have been a matter of design choice to orient the second plurality of pins in different plane.

Regards claim 9, Shih fails to disclose a plurality of pins each includes a building material attachment barb attached to a pin proximal end.



However, Shih disclose the pins are metal staple pins or nails that pierce through wood or other hard material and remained inside wood or material as well known. In situation when the material is softer than wood like drywall, it would have been obvious to one of ordinary skilled in the art to become motivated to provide each pin an attachment barb attached to the proximal end in order to maintain its position inside the material.

Regards claim 10, Shih disclose the detection field additionally includes:

a dielectric sheet (plywood surface or other substrate);

a first electrically conductive trace (wire 59) formed overlying the dielectric sheet and connected to the first electrical contact;

a second electrically conductive trace (wire 60) formed overlying the dielectric sheet and connected to the second electrical contact;

wherein the first plurality of pins extend from the first trace;

and,

wherein the second plurality of pins extend from the second trace as seen in Figure 5.

Regards claim 11, Shih disclose each pin (conventional metal nail) has a cross-sectional axis diameter in the range of 0.01 to 0.3 inches or other range as a matter of desired.

Regards claim 12, Shih discloses each pin has a length about 6 mm as seen in col. 5, lines 18-20, which is less than .25 of an inch and fail to fall within the range of 0.25 to 5 inches. However, one of ordinary skilled in the art would recognize that the

length of the pin is selected based on the thickness of the material being monitored, thus, it would have been obvious to one ordinary skilled artisan to desirably select the pin having length in the range of 0.25 to 5 inch or other range as a matter of design choice.

Regards claims 13-15, Shih disclose the detection field is used on a roof, a floor and a basement wall as seen in examples 1-7. However, Shih fail to disclose specifically the length of each pin varies in the range of 0.375 to 0.5 inches for drywall interface, 1.5 to 5 inches for insulation interface and 0.25 to 0.375 for carpet interface. One of ordinary skilled in the art would recognize that the length of the pin is selected based on the thickness of the material being monitored, thus, it would have been obvious to one ordinary skilled artisan to desirably select the pin having length in the range of 0.375 to 0.5 inches for drywall interface, 1.5 to 5 inches for insulation interface and 0.25 to 0.375 for carpet interface or other ranges as suitable as a matter of design choice.

Regards claim 16, Shih disclose the separation between a pin from the first plurality of pins, and an adjacent pin from the second plurality of pins, is (1 cm) in the range of 0.1 to 2 inches as seen in col. 5, lines 13-15.

Regards claim 17, Shih discloses a plurality of pins (staple pins or nails) are selectively detachable (removable), at the distal end, from the electrically conductive traces (wires) by proper tools as seen from Figure 5.

Regards claim 18, Shih fails to disclose a plurality of pins each include an electrically insulated shoulder covering the distal end; and,

an electrically conductive proximal end.

However, it has been known that wire have insulation covering its length and the end is stripped off insulation to expose bare conductor for electrically connect to other electrical device as found in common wire. However, in this situation, one of ordinary skilled in the art would desire to insulate the distal end by using insulation covering the distal end and expose the proximal end for conductivity as a matter of design choice.

Regards claims 19-20, Shih discloses the dielectric sheet (plywood, tar paper) is rigid or flexible as seen in examples 1 and 4; col. 5, lines 10-12 and col. 6, lines 57-60.

Regards claim 22, Shih fails to disclose the first electrical connector includes spring-loaded jaws to capture a wire.

However, it has been known in the art to use connector for connecting to conductors or wires including clamps, spring-loaded jaws, screws and welding for capturing a conductor or wire as commonly found in speaker wire connection.

Thus, it would have been obvious to one of ordinary skilled in the art to provide a mean as such clamps or spring-loaded jaws for capturing a wire.

### ***Allowable Subject Matter***

10. Claim 21 objected to as being dependent upon a rejected base claim (10), but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tacilaukas (US 7084776) disclose a fluid detection apparatus.

Tamai (US 7049969) discloses a 3-D liquid detection sensor.

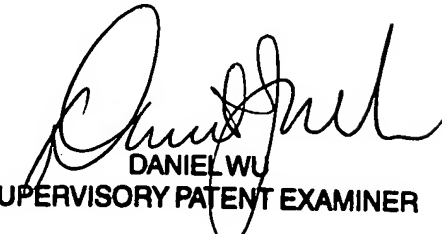
Raphael (US 5546009) discloses a liquid detector system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lam P. Pham whose telephone number is 571-272-2977. The examiner can normally be reached on 10AM-7PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Wu can be reached on 571-272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lam P Pham  
Examiner  
Art Unit 2612

  
DANIEL WU  
SUPERVISORY PATENT EXAMINER  
09/11/06

